

REMARKS

I. Rejections Under 35 U.S.C. §112

In the Office Action dated August 30, 2004, the Examiner rejected claims 1-28 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regards as the invention.

Regarding claim 1, the Examiner cited claim 1, line 6, arguing that "said amplifier said-signal conditioning circuit" is vague and indefinite. The Examiner indicated that it appears that one or more words of text are missing here. The Applicants have therefore amended claim 1 to overcome this minor error. The Examiner also indicated that in claim 1, line 7, "compensates to drive" is vague and indefinite, arguing that it cannot be determined what exactly Applicant means here. The Examiner argued that to recite that the offset correction voltage at the input of the amplifier "drives" the output does not make any sense. The Examiner also argued with respect to claim 1 that it cannot be determined what is meant by "to an input voltage divided by a value of two by calibration" on line 8.

With regard to the term "drive", the Applicant notes that Applicant's specification points out, for example, that circuit 80 applies an offset correction voltage to the noninverting input and the MR half bridge signal to the inverting input (i.e., due to mismatch of the two magnetoresistors and magnet mispositioning, $V_{P2} \neq V_s/2$). Therefore, the voltage at the noninverting input compensate this value to "drive" $V_o = V_s/2$ by calibration. Thus the term "drive" is utilized and explained in the context of Applicant's specification.

In order to overcome the aforementioned rejection to claim 1, however, the Applicant has amended claim 1 to further define the step: applying a magnetoresistor half-bridge signal to an inverting input of said amplifier of said signal-conditioning circuit, wherein said offset correction voltage at said noninverting input drives an output voltage of said signal-conditioning circuit to an input voltage, which is divided by a value of two, thereby generating a resulting voltage value, which is utilized to automatically calibrate said magnetoresistive half-bridge signal for temperature compensation purposes. The Applicant believes that this amendment clarifies the aforementioned issues raised by the Examiner.

Regarding claim 6, the Examiner argued that claim 6 is indefinite because it is misdescriptive of the invention. The Applicant respectfully disagrees with this assessment. Claim 6 is directed to the step of connecting at least two magnetoresistors to one another at a first node and at least two other magnetoresistors to one another at a second node, wherein said second node is connected to a positive input of said amplifier of said signal-conditioning circuit. Applicant submits that the limitations of claim 6 are clearly supported by Applicant's specification. For example, as illustrated in Applicant's FIG. 1, a magnetoresistor 88 is connected to a magnetoresistor 90 at a first node 100. Another magnetoresistor 84 is connected to a magnetoresistor 86 at a second node 98. The second node 98 is connected to the positive input of the amplifier 82. Similar features are also illustrated in Applicant's FIGS. 2, 3, 4. Applicants thus submit that claim 6 is not indefinite and is not misdescriptive of the invention and therefore the aforementioned rejection to claim 6 should be withdrawn.

Regarding claim 7, the Examiner noted that the term "coupled" should be deleted. The Applicant has therefore amended claim 7 as indicated herein to delete this term. Applicant thus submits that the rejection to claim 7 under 35 U.S.C. § 112 has been traversed. Applicant respectfully requests withdrawal of this rejection.

Regarding claim 8, the Examiner argued that in claim 8, line 2 "coupling comprise" is not understood. The Examiner indicated that it appears that the word "comprise" should be deleted. The Applicant has therefore amended claim 8 as indicated herein to delete this term. Applicant thus submits that the rejection to claim 8 under 35 U.S.C. § 112 has been traversed. Applicant respectfully requests withdrawal of this rejection.

Regarding claim 13, the Examiner argued that the word "low" is indefinite for the reasons noted in the previous action. The Applicant has therefore amended claim 13 to remove the word "low". The Applicant notes, however, that "low" is defined and shown in Applicant's specification with respect to FIG. 5, which illustrates a temperature coefficient graph for InSb magnetoresistors. As such, the graph of FIG. 5 illustrates the characteristics of a "low" temperature coefficient resistor. Due to the amendments to claim 13, the Applicant submits that that the rejection to claim 13 under 35 U.S.C. § 112 has been traversed. Applicant respectfully requests withdrawal of this rejection.

Regarding claims 14-28, the Examiner argued that such claims are seen to include the same problems noted above with respect to claims 1, 6, 8 and 13 and as such should also be corrected in response to the office Action. The Examiner notes that similar changes have been made to claims 14-28 by amendment. Regarding claim 28, Applicant notes that the following feature is included in claim 28: a voltage electronically compensated at the noninverting input, wherein a resulting compensated voltage drives an output voltage of the signal-conditioning circuit to an input voltage that is divided by a value of two during a calibration thereof. Applicant notes that Applicant's specification teaches a calibration procedure and a signal-conditioning circuit, including electronic compensation of voltages.

Based on the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejections to claims 1-28 under 35 U.S.C. § 112.

II. Rejections Under 35 U.S.C. §102(e)

Requirements for *Prima Facie* Anticipation

A general definition of *prima facie* unpatentability is provided at 37 C.F.R. §1.56(b)(2)(ii):

A *prima facie* case of unpatentability is established when the information *compels a conclusion* that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability. (*emphasis added*)

"Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundsciber Corp. v. United States*, 360 F.2d 954, 960, 148 USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)), *cert. denied*, 469 U.S. 851 (1984). Thus, to anticipate the applicants' claims, the cited reference must disclose each element recited therein. "There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991).

To overcome the anticipation rejection, the applicants need only demonstrate that not all elements of a *prima facie* case of anticipation have been met, *i. e.*, show that the cited reference fails to disclose every element in each of the applicants' claims. "If the examination at the initial state does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 977 F.2d 1443, 24 USPQ 2d 1443, 1444 (Fed. Cir. 1992).

Kunde et al.

In the above-captioned Office Action, the Examiner rejected claims 1, 3-8, 14-15 and 18-22 under 35 U.S.C. §102(e) as being anticipated by Kunde et al., "Kunde" (U.S. Patent No. 6,326,781 B1). The Examiner noted paragraph two of the 1/29/2003 office action for details of this rejection. The Examiner cited Fig. 4, where the recited steps of "offset correction" and/or "compensating a voltage at the non-inverting input" are performed by the resistors 24, and the magnetoresistor half-bridge signal is provided by circuits 14 and 15. Applicant respectfully disagrees with this assessment.

Fig. 4 of Kunde does not show an offset correction voltage applied to a non-inverting input of a signal-conditioning circuit. Additionally, Kunde does not disclose a signal-conditioning circuit in which an offset correction voltage at the non-inverting input compensates to drive an output voltage of the signal-conditioning circuit to an input voltage divided by a value of two by calibration for temperature compensation thereof by the signal-conditioning circuit. Resistors 24 comprise variable resistors and do not perform these types of offset correction functions. As Kunde explains at col. 7, lines 6-9, the null offset voltages of bridges 14 and 15 with no magnetic field are trimmed out using trim resistors 24. Such a feature does not anticipate all of the functions and features described by claim 1. For similar reasons, Kunde also does not anticipate claims 3-8 and 14-15 and 18-22.

Instead, Kunde is directed toward an apparatus for sensing and indicating the angular position of a first rotor mounted for 360 degree rotation about a first axis, as indicated at col. 9, lines 29-31, which does not provide via Fig. 4, an input voltage divided by a value of two by calibration for temperature compensation thereof. Additionally, Kunde does not disclose or anticipate a temperature compensation methodology or apparatus. Applicant specifically notes that Kunde also does not disclose an InSb signal-conditioning circuit.

The Applicant reminds the Examiner that in order to sustain a rejection to a claim(s) under 35 U.S.C. 102(3) based on a cited reference, the reference in question (i.e., in this case, Kunde et al) must show all of the limitations of the rejected claims. If even one feature is lacking in the cited reference, the rejection must be withdrawn and the claim allowed as indicated by the prima facie requirements for anticipation discussed above. The Applicant submits that Kunde does not show all of the features and limitations of Applicant's claims 1, 3-8, 14-15 and 18-22. The Applicant therefore requests that the rejection to claims 1, 3-8, 14-15 and 18-22 under 35 U.S.C. §102(e) as being anticipated by Kunde be withdrawn.

III. Rejections Under 35 U.S.C. §102(b)

Nelson

In the above-captioned Office Action, the Examiner rejected claims 1-29 under 35 U.S.C. §102(b) as being anticipated by Nelson (U.S. Patent No. 5,455,510). The Examiner noted paragraph three of the 1/29/2003 office action for details of the rejection. The Examiner cited Fig. 6 of Nelson where the magnetoresistors are elements RM1 through RM4, and resistors R1 and R2 provide the offset voltage. The Examiner also noted the temperature compensation throughout the Nelson reference. Applicant respectfully disagrees with this assessment.

Although Fig. 6 does indicate resistors R1 and R2, such resistors do not result in the formation of a signal-conditioning circuit in which an offset correction voltage at the non-inverting input compensates to drive an output voltage of the signal-conditioning circuit to an input voltage divided by a value of two by calibration for temperature compensation thereof by the signal-conditioning circuit. In fact, a division by a value of two is not disclosed in Nelson.

Although Fig. 6 of Nelson does discuss a temperature compensation circuit 62, this circuit is not a signal-conditioning circuit in which an offset correction voltage at the non-inverting input compensates to drive an output voltage of the signal-conditioning circuit to an input voltage divided by a value of two by calibration for temperature compensation thereof by the signal-conditioning circuit. Instead, as indicated at col. 5, lines, lines 57-59, "because the resistors of the voltage divider are not temperature sensitive, voltages V7 and V8 do not vary as a function of changing temperature." Such a statement, by its very nature, indicates that the voltage divider of Nelson is not temperature sensitive, whereas the offset correction voltage of Applicant's invention does result in a temperature sensitive circuit, and therefore assists in achieving temperature compensation via a methodology not anticipated by the temperature compensation circuit 62 of Nelson. Temperature compensation achieved by Nelson is not achieved in the same manner as Applicant's invention, and therefore Nelson does not anticipate Applicant's invention.

Applicants additionally point out that Nelson does not anticipate the use of InSb magnetoresistors in the manner taught by Applicant's invention. Therefore, Applicant believes that those claims, which are directed toward the use of InSb, should be allowed because Nelson does not anticipate them.

Applicant therefore submits that the rejection to claims 1-29 under 35 U.S.C. §102(b), as being anticipated by Nelson should be withdrawn. Applicant therefore respectfully requests withdrawal of the rejection to claims 1-29 under 35 U.S.C. §102(b).

IV. Rejections Under 35 U.S.C. §103(a)

Requirements for Prima Facie Obviousness

The obligation of the examiner to go forward and produce reasoning and evidence in support of obviousness is clearly defined at M.P.E.P. §2142:

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

M.P.E.P. §2143 sets out the three basic criteria that a patent examiner must satisfy to establish a *prima facie* case of obviousness:

1. some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
2. a reasonable expectation of success; and
3. the teaching or suggestion of all the claim limitations by the prior art reference (or references when combined).

It follows that in the absence of such a *prima facie* showing of obviousness by the examiner (assuming there are no objections or other grounds for rejection), an applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443 (Fed. Cir. 1992). Thus, in order to support an obviousness rejection, the Examiner is obliged to produce evidence compelling a conclusion that each of the three aforementioned basic criteria has been met.

Kunde et al

In the above-captioned Office Action, the Examiner rejected claims 2, 11, 16 and 26 under 35 U.S.C. §103(a) as being unpatentable over Kunde. The Examiner argued that the use of InSb as the material for forming the magnetoresistors would have been obvious to those having ordinary skill in the art who knew that this is a typical material for making magnetoresistors, of which fact official notice is taken thereof by the Examiner. The Applicant respectfully disagrees with this assessment.

Kunde does not show an offset correction voltage applied to a non-inverting input of a signal-conditioning circuit. Additionally, Kunde does not disclose a signal-conditioning circuit in which an offset correction voltage at the non-inverting input compensates to drive an output voltage of the signal-conditioning circuit to an input voltage divided by a value of two by calibration for temperature compensation thereof by the signal-conditioning circuit. These features are disclosed in claim 1, from which claim 2 depends. Similar arguments also apply to claims 11, 16, and 26. Kunde additionally does not disclose, teach or suggest a temperature compensation circuitry and methodology of the type taught by Applicants' invention. In fact, Kunde does not discuss temperature compensation at all. Instead, Kunde describes a system for sensing and indicating the angular position of a shaft through 360 degrees of rotation using a two-axis magnetoresistive microcircuit, a two pole magnet which rotates with the input shaft, a two channel operational amplifier, and an electromechanical device to provide shaft angle indication. Temperature compensation is not achieved by the circuitry of Kunde.

Also, the Examiner has not adequately explained how the use of InSb as the material for forming the magnetoresistors would have been obvious to those having ordinary skill in the art. Additionally, the Examiner has not provided an explanation of why one skilled in the art would have been motivated to combine the use InSb as the material for forming the magnetoresistors for use in a signal-conditioning circuit as claimed by Applicant. The applicants respectfully assert that the rejection to claims 2, 11, 16 and 26 herein fails under the first, second and third prongs of the aforementioned obviousness test/criteria because, for the reasons discussed *infra*, *Kunde* neither teaches nor suggests all of the limitations set out in such claims, and the Examiner has failed to provide a reason explaining why one skilled in the art would have been motivated to modify Kunde et al, when Kunde et al does not teach and/or disclose all of the features and limitations of Applicant's claims 2, 11, 16, and 26. Additionally, the Examiner has not provided a reasoning for why a reasonable expectation of success would be achieved in modifying Kunde to produce all of the features of Applicant's claims 2, 11, 16, and 26.

Without an adequate explanation of motivation as such, and establishing that all three prongs of the aforementioned obviousness test/criteria have been met, the rejection to claims 2, 11, 16 and 26 under 35 U.S.C. §103(a) as being unpatentable over Kunde should be withdrawn. Applicants therefore requests withdrawal of the rejection to claims 2, 11, 16 and 26 under 35 U.S.C. §103(a).

V. Conclusion

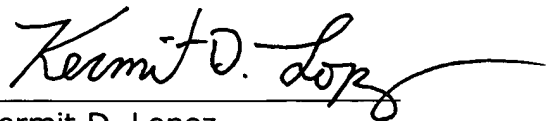
Applicants have amended the claims to more particularly disclose the invention claimed thereof. It is believed that support for such amendments is provided within the specification, and that the specification adequately enables such amendments. No new subject matter has been introduced as a result of this amendment.

Applicants have therefore responded to each and every objection and rejection of the Official Action, and respectfully request that a timely Notice of Allowance be issued. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objections and the rejections under 35 U.S.C. §112, §102 and §103, and further examination of the present application.

In view of the above remarks, allowance of all claims pending is respectfully requested. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicants' attorney at the below-indicated telephone number.

Dated: November 17, 2004

Respectfully submitted,

A handwritten signature in black ink that reads "Kermit D. Lopez". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

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